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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/993,338	11/13/2001	Scott R. Manalis	S98-157/US	5773
30869	7590	11/17/2003		
LUMEN INTELLECTUAL PROPERTY SERVICES, INC. 2345 YALE STREET, 2ND FLOOR PALO ALTO, CA 94306				
EXAMINER REDDING, DAVID A				
ART UNIT		PAPER NUMBER		
1744				

DATE MAILED: 11/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

### Office Action Summary

**Application No.**

09/993,338

**Applicant(s)**

MANALIS ET AL.

**Examiner**

David A Redding

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 18 August 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-50 is/are pending in the application.
- 4a) Of the above claim(s) 18-25 and 43-50 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 and 26-42 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. §§ 119 and 120**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Election/Restrictions***

1. Applicant's election with traverse of group I, claims 1-17,26-42, is acknowledged. The traversal is on the ground(s) that there are no directions given within the claim to support an alternative utility. This is not found persuasive because with regards to the scope of the search required for the claims, the preamble carries little weight. The body of claims 1 and 17 constitute subject matter which would include a DNA assay device which applicant admits that the device could be used for.

The requirement is still deemed proper and is therefore made FINAL.

***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-17, 26-42, are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 1 and 17, applicant employs the term "electrometer". It is indefinite as to what structure is defined by the term "electrometer". What elements are necessary when used in combination to constitute an "electrometer".

Claim 42 recites the limitation "integrated circuit" in claim 16. There is insufficient antecedent basis for this limitation in the claim.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
  2. Ascertaining the differences between the prior art and the claims at issue.
  3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
5. Claims 1-3,16,17,26-28,41,42 are rejected under 35 U.S.C. 103(a) as being unpatentable over USP 5,827,482 (Shieh et al) in view of USP 5,959,095 (Martinelli et al.).

The Shieh et al. patent discloses a DNA molecule detection device. The device comprises a transistor (12) having a gate (14), a source (16), an a drain (18) (See figure 1). The transistor (12) has a semi conductive channel (20) which electrically couples the source (16) to the drain (18). A conductance between the source (16) and the drain (18) is dependent upon a voltage or a charge applied to the gate (14). The transistor (12) can be formed using various known technologies.

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The reference further discloses that the transistor 12 is comprised of a thin-film transistor (TFT) or a field-effect transistor (FET) such as a metal-oxide semiconductor FET (MOSFET). In these cases, the semi conductive channel can be formed by a thin-film semi conductive layer or by bulk semi conductive material. These configurations are considered to constitute a "nanoscale electrometer". The gate (14) can be either directly coupled to the semi conductive channel (20), or can be coupled to the semi conductive channel (20) by an insulator. The gate (14) is located at a binding site for receiving a molecular receptor (22). Preferably, the molecular receptor (22) is bound directly to the gate (14), in which case the gate (14) supports or defines the binding site. Here, the molecular receptor (22) can be bound to the gate (14) by a primer. More generally, the molecular receptor is electrically coupled, to the gate (14).

In general, the molecular receptor (22) is selected in dependence upon a molecule (24) which is to be detected. The molecular receptor (22) typically includes a biological or synthetic molecule that has a specific affinity to the molecule (24) to be detected. The molecular receptor (22) can include a chain of at least one nucleotide which hybridizes with a complementary chain of at least one nucleotide included in the molecule. Here, for example, the molecular receptor (22) can include a DNA probe for detecting a corresponding, complementary DNA sequence in the molecule (24). Martinelli et al. disclose the use RNA polymerase as a probe in DNA sequence detection (see abstract).

Accordingly, it would have been obvious to one skilled in the art that for the DNA sequence detection method disclosed in Shieh et al. that RNA polymerase could be used as the molecular receptor (22) in view of the RNA polymerase known use as a DNA probe as taught in Martinelli et al.

Claims 26-28 specify a plurality of interconnected electrometers. In re Harza, 274 F.2d 669, 124 USPQ 378 (CCPA 1960) the court held that mere duplication of parts has no patentable significance unless a new and unexpected result is produced.). Accordingly, in the absence of unexpected results the plurality of interconnected electrometers is considered to be a mere duplication of the Shieh et al. and Martinelli et al. device.

6. Claims 4-8, 29-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over USP 5,827,482 (Shieh et al.) and USP 5,959,095 (Martinelli et al.) as applied to claim 1 and 26 and further in view of USP 5,731,598 (Kado et al.).

Shieh et al. is silent as to the specifics of the electrometer. Kado et al. disclose an electrometer in the form of a nanoscale single electron transistor device which is operable at room temperature (col.5, lines 40-48) and is constructed with gold particles (col.2, lines 18-22). Accordingly, it would have been obvious to one skilled in the art to use the single electron transistor of Kado et al. in place of the transistor of Shieh et al. in view of Shieh et als. disclosed use of transistors.

In *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984), the Federal Circuit held that, where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device. Accordingly, the limitations of claims 4-6, 29-31 are considered to be unobvious in view of Shieh et al, Martinelli et al., Kado et al.

***Allowable Subject Matter***

7. Claims 9-15,34-40 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

As allowable subject matter has been indicated, applicant's reply must either comply with all formal requirements or specifically traverse each requirement not complied with. See 37 CFR 1.111(b) and MPEP § 707.07(a).

***Conclusion***

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David A Redding whose telephone number is 703-308-3910. The examiner can normally be reached on Mon.-Fri. 6:00 - 3:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Warden can be reached on 703-308-2910. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9310.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-3910.

*David A. Redding*  
DAVID A. REDDING  
PRIMARY EXAMINER  
2010-12-06

D.A.R.